Carolinas Coastal Ocean Observing and Prediction System
(Caro-COOPS)

University of South Carolina Research Foundation

The central goal of Caro-COOPS is prediction of coastal ocean processes. The ultimate objectives are to 1) integrate information on the causal biological, chemical, and physical processes in the Carolinas' coastal ocean to provide a thorough understanding of how physical forcing and biological responses are coupled on regional to local spatial scales and event, seasonal, inter-annual, and decadal time scales; 2) assess the predictability of specific coastal processes and events and use this information to develop accurate forecasting models; and 3) create tools for applying and evaluating these predictions to provide user communities with early-warning systems and for informed decision-making and planning. Caro-COOPS is a wholly integrated system for coastal observations and their application to user-driven needs, including 1) an extensive array of instrumented moorings in the South Atlantic Bight off the Carolinas; 2) a comprehensive data management system, essential for aggregation, organization, standardization, visualization, and dissemination of high quality, real-time data; and 3) an advanced suite of integrated models that will markedly improve the predictive capacities of real-time physical data from coastal ocean instrumentation.

An initial demonstration of the real-time interdisciplinary forecast concept for Caro-COOPS is real-time prediction and analyses of storm surge and flooding before and during landfall of coastal storms. This will improve warnings and provide local officials with the information needed for mitigation, preparedness, and prevention measures. Most recently, Caro-COOPS has also been laying the groundwork for a pilot project that applies coastal ocean data and predictions capabilities to the development of tools that support commercial and recreational fisheries and their management.

Implementation of Caro-COOPS involves collaborative interactions with other observing systems programs, particularly the Coastal Ocean Research Program (CORMP) at University of North Carolina at Wilmington, the multi-institutional SouthEast Coastal Ocean Observing System (SEACOOS), and the emerging Southeast Coastal Ocean Observations Regional Association (SECOORA) promoted by OceanUS.